

Side Effect of Some Herbicides on *Rhizobium leguminosarum* Isolated from Leguminous Nodules

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Background & Objectives: The interactions between legume and Rhizobiums are most important interactions due to provide 80-90% of total nitrogen requirement of legumes. One of the most important species in the family Rhizobiaceae is *R. leguminosarum*. This bacterium is Gram negative, motile, non-spore-forming and rod that forms mildly mucoid colonies on Yeast extract manitol agar at the optimal growth temperature of 28°C. Although herbicides improve and protect the plant growth, sometimes they have side effects on microbial population especially on Rhizobiaceae. Hence, survival of these bacteria might be affected by herbicides. The major propose of this study was to investigate effect of four herbicides viz., linuron, bentazone, paraquat and EPTC on survival of *Rhizobium leguminosarum* which is isolated from leguminous nodules..

Methods: Susceptibility of the bacterium against the herbicides was assessed by two well diffusion agar and Minimal Inhibitory Concentration method.

Results: The results obtained from this study indicated that survival of the isolated bacterium affected by all of the herbicides. The EPTC with zone of inhibition 44 mm had more while linuron with zone of inhibition 28 mm had less effect on isolated microorganism. In addition the results from Minimum Inhibitory Concentrations indicated that MICs for praquat and EPTC were less than the others while for linuron (100 mg/ml) was more.

Conclusion: Overall, all herbicides were used in this study showed antimicrobial effect on the microorganism tested. Although herbicides could have favorable property for crop growing and gardening, it must be noted that, for application their structure and concentrations are main factors.

Keywords: *Rhizobium leguminosarum*; Linuron; Bentazone; Paraquate; EPTC; MIC